IN THE CLAIMS.

1. (Currently Amended) A method of processing a volumetric scan of a periodically moving object, comprising:

performing a volumetric scan of a periodically moving object;

identifying a time interval of a periodic movement of said periodically moving object within said volumetric scan;

dividing said volumetric scan into volume subsets based on said time interval;

analyzing said periodic movement between adjacent volume subsets to determine a correction between said adjacent volume subsets; and

adjusting said time interval based on said correction.

2. (Original) The method of claim 1, said volume subsets further comprising adjacent scan planes, said method further comprising combining scan planes having a same phase in time with respect to said time interval.

3. (Original) The method of claim 1, said volumetric scan further comprising two dimensions of spatial information and one dimension of combined spatio-temporal information.

4. (Original) The method of claim 1, said volumetric scan being performed using at least one of color flow, power Doppler, tissue Doppler, B-flow, B-mode, Coded Excitation, and harmonic imaging.

5. (Original) The method of claim 1, said performing step further comprising scanning said periodically moving object once in a single direction.

6. (Original) The method of claim 1, said periodically moving object comprising one of a fetal heart, a heart, a heart valve, a vein, and an artery.

7. (Original) The method of claim 1, said performing step further comprising scanning said periodically moving object once in a single direction over at least two said time intervals.

8. (Original) A method of acquiring a diagnostic image of a periodically moving object, comprising:

acquiring a series of scan planes comprising a moving object, said moving object repeating a cycle of movement over time, said series of scan planes being acquired over at least two movement cycles;

dividing said series of scan planes into N adjacent subsets, each said adjacent subset having a first time interval;

identifying at least one common point of interest within each of said series of scan planes;

comparing intensity values of said at least one common point of interest between said adjacent subsets; and

calculating an adjusted time interval for at least one of said adjacent subsets based on said intensity values.

9. (Original) The method of claim 8, wherein said first time interval being based on an average of said cycle of movement.

10. (Original) The method of claim 8, said comparing step further comprising:

calculating cross correlations of said intensity values of said at least one common point; and

identifying a maximum on each said cross correlations, said maximum characterizing a correction at which said intensity values best match between said adjacent subsets.

11. (Original) The method of claim 8, further comprising:

said comparing step further comprising comparing first and second adjacent subsets; and

said calculating step further comprising calculating said adjusted time intervals for said first adjacent subset through N adjacent subset based on said intensity values, said adjusted time interval of said first adjacent subset being one of greater than, equal to, and less than said first time interval, said second through N adjacent subsets having said adjusted time intervals equal to said first time interval.

12. (Original) The method of claim 8, further comprising:

said comparing step further comprising comparing first and second adjacent subsets;

said calculating step further comprising calculating said adjusted time intervals for said first adjacent subset through N adjacent subset based on said intensity values, said adjusted time interval of said first adjacent subset being one of greater than, equal to, and less than said first time interval, said second through N adjacent subsets having said adjusted time intervals equal to said first time interval;

said comparing step further comprising comparing said second adjacent subset and a third adjacent subset; and

said calculating step further comprising calculating said adjusted time intervals for said second adjacent subset through N adjacent subset based on said intensity values, said adjusted time interval of said second adjacent subset being one of greater than, equal to, and less than said first time interval, said third through N adjacent subsets having adjusted time intervals equal to said first time interval.

13. (Original) The method of claim 8, wherein said at least one common point further comprising multiple common points, said method further comprising:

said comparing step further comprising calculating cross correlations of said intensity values between said adjacent subsets;

calculating summed cross correlations for pairs of said adjacent subsets;

identifying a maximum value on each said summed cross correlation; and

said calculating step further comprising calculating shifts based on said maximum values, said adjusted time intervals being based on said shifts.

14. (Original) The method of claim 8, wherein said at least one common point further comprising multiple common points, said method further comprising:

said comparing step further comprising calculating cross correlations of said intensity values between said adjacent subsets;

calculating summed cross correlations for pairs of said adjacent subsets;

identifying a location of a maximum value with respect to a zero point on each of said summed cross correlations; and

said calculating step further comprising calculating differences between said maximum values and zero points for each said summed cross correlation, said adjusted time intervals being based on said differences.

15. (Original) The method of claim 8, further comprising:

interpolating adjacent scan planes within said adjacent subsets to create interpolated scan planes;

identifying scan planes and said interpolated scan planes having a same phase in time; and

combining at least two said scan planes and said interpolated scan planes having said same phase into a volume.

16. (Original) The method of claim 8, further comprising combining at least two scan planes into a volume, said at least two scan planes having a same phase in time within said adjacent subsets.

17. (Original) An apparatus for acquiring a volumetric scan of a periodically moving object, comprising:

a transducer comprising an array of elements for transmitting and receiving ultrasound signals to and from an area of interest comprising a periodically moving object;

a transmitter for driving said array of elements to scan said periodically moving object once in a single direction;

a receiver for receiving said ultrasound signals, said ultrasound signals comprising a series of adjacent scan planes; and

a processor for processing said series of adjacent scan planes, said processor identifying a time interval based on said periodically moving object and dividing said series of adjacent scan planes into volume subsets based on said time interval, said processor comparing adjacent volume subsets and calculating adjusted time intervals for at least one of said adjacent volume subsets.

18. (Original) The apparatus of claim 17, said adjusted time intervals being based on a comparison of equivalent coordinates between said adjacent volume subsets.

19. (Original) The apparatus of claim 17, further comprising:

an interpolator interpolating said adjacent scan planes within said volume subsets between said adjacent volume subsets having unequal said time intervals; and

said processor further comprising combining interpolated scan planes and scan planes having a same phase within said volume subsets into a volume.

20. (Original) The apparatus of claim 17, further comprising:

a memory storing said series of scan planes; and

said processor further comprising retrieving said series of scan planes from said memory prior to processing said series of scan planes.